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DCSA Interface Standard for Operational Vessel Schedules 1.0

Data and Interface Standards
Digital Container Shipping Association

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Preface

DCSA envisions a digitally interconnected container shipping industry. Our mission is to be the de facto standards body for the industry, setting the technological foundation for interoperable IT solutions. Together with our member carriers, DCSA creates vendor-neutral, technology-agnostic standards for IT and non-competitive business practices. By working towards the widespread adoption of these standards, our aim is to move the industry forward in terms of customer experience, efficiency, collaboration, innovation and respect for the environment.

The objective of the DCSA 'Data and Interface Standard' project workstream is to strengthen the container shipping industry's ability to send and receive data across industry participants. Furthermore, it aims to enhance inter-vessel operator cooperation based on shared requirements, and to ensure interoperability by using a shared data language. Ideally, this language will be inspired by existing standards and aligned with the industry process definitions as put forth in DCSA Schedule Definitions 1.0.

The standards published by the DCSA are technology agnostic. The DCSA does not point to the use of specific vendors' technologies or systems but relies on open-source shared requirements for the industry that can be used by all parties, regardless of the choice of technology.

This document

This document is a publication of the DCSA Interface Standard for Operational Vessel Schedules 1.0. The aim of this standard is to ensure that communication interfaces for OVS (operational vessel schedules) are based on a common industry understanding of OVS data and processes. This will foster consistency, simplicity and timeliness in vessel schedule solutions across the industry, supporting interoperability in container shipping.

This document is supported and complemented by a range of supplementary DCSA publications. The supporting publications are:

DCSA Glossary of Terms 2.0

- The glossary is used to support the reader with definitions and explanations of the business terms used in the DCSA documents. It ensures that all readers interpret the terms in the same way.

DCSA Industry Blueprint 2.0

- The Industry Blueprint 2.0 provides insights on as-is carrier processes with special focus on track and trace and operational vessel schedules. It comprises processes related to the movement of a container from one location to another.

DCSA Schedule Definitions 1.0

- This document aims to standardise the terminology and definitions with respect to communication of operational deep-sea (inter-regional) vessel schedules between Vessel Sharing Agreement (VSA) partners. The purpose is to facilitate standardisation and accuracy in partner communication and hence reduce the pain-points that carriers have raised in this area. It is understood that not all VSA's (or carriers) apply ALL processes, but for the sake of completeness, the full process definitions are shared with all members. The purpose is to standardise what information partners communicate when (and to whom) with respect to operational vessel schedules and related exception management. The definitions and time specifications add context to the vessel schedule process maps that have been circulated separately to members.

DCSA Information Model 2.0

- The DCSA Information Model 2.0 organises and catalogues the information being generated or consumed in connection with the processes described in the DCSA Schedule Definitions 1.0. The DCSA Information Model 2.0 is also a collective term that describes all products that model the data needed to meet the interface requirements. Further, the DCSA Information Model 2.0 also includes a diagrammatic representation of entities and their interrelationships.

DCSA Information Model 2.0 Reading Guide

- The DCSA Information Model 2.0 Reading Guide provides context for the DCSA logical data model for operational vessel schedules and track and trace use cases. The guide provides insight into the different concepts and methods utilised in the production of the documents and also suggests ways in which the DCSA Information Model can be used now and extended in the future.

DCSA Interface Standard for Operational Vessel Schedules 1.0 Reading Guide

- The DCSA Interface Standard for Operational Vessel Schedules 1.0 Reading Guide provides context for the DCSA operational vessel schedules initiative with specific focus on interfaces. The guide provides insight into the different concepts and methods utilised in the production of the documents. It also suggests ways in which the documents can be used as a foundation for future implementations.

Document ID and version history

Name	Description
Document	DCSA Interface Standard for Operational Vessel Schedules
Date created	2020-07-03
Document author	Digital Container Shipping Association (DCSA)
Version 1.0	First publication

Table 1 Document information

Referenced documents

- DCSA Glossary of Terms 2.0
- DCSA Industry Blueprint 2.0
- DCSA Schedule Definitions 1.0
- DCSA Information Model 2.0
- DCSA Information Model 2.0 Reading Guide
- DCSA Interface for Operational Vessel Schedules 1.0 Reading Guide

1 Introduction

1.1 Objective

The objective of the DCSA Interface Standard for Operational Vessel Schedules 1.0 is to simplify the exchange of information related to vessel schedules between vessel operators. In doing so, this publication supports standardisation of the fundamental information provided across the liner vessel operator domain. The focus of this publication is to ensure agreement on the shared requirements and standards that must be followed to streamline inter-operational functionality and data sharing across relevant industry participants. This agreement should be further supported by use cases or designated subject areas.

Agreement on standards will ensure that the interfaces, including the functionality and data provided via the interfaces, will follow the same definitions and design. The aim is to ensure that the end-user experience remains consistent across all industry participants who use these standards. Hence, the interface elements must remain consistent whether they are built using EDI messaging, interactive UIs, APIs, manual data exchanges or any other interface technology.

1.2 Overview

In defining a technology-agnostic interface standard, the interface describes all exchanges of information between any two parties. For operational vessel schedules, the relevant parties are:

- vessel operator
- vessel partner
- operational third parties, i.e. parties that provide services to the vessel, such as port operators

Many other parties may be involved in the movement of goods, such as haulers, freight forwarders, feeder operators and barge operators. However, DCSA considers the above-mentioned parties to be the main actors in the context of operational vessel schedules. Commercial third parties such as commercial intermediaries are not in scope for this publication.

1.3 Conformance

All parties in the container shipping industry are encouraged to implement and follow the data and interface requirements outlined and specified in this document. The requirements are linked to the UML version 2.0 diagrams for design requirements and the DCSA Logical Data Model and data definitions for information requirements, which must be implemented in order to conform to the agreed standards within the DCSA framework.

1.4 Normative references

The documents listed below constitute the normative references for the DCSA Interface Standard for Operational Vessel Schedules 1.0:

- DCSA Glossary of Terms
- DCSA Industry Blueprint
- DCSA Schedule Definitions
- DCSA Information Model
- DCSA Information Model Reading Guide
- DCSA Interface for Operational Vessel Schedules Reading Guide

2 User Stories

The user stories in the table below illustrate potential ways of using the interface for operational vessel schedules. Please note that the below-mentioned user stories focus on intra-vessel operator communication and relate to the use case definitions in the next section.

The following user stories focus on actors that are part of a VSA: vessel partners and vessel operators. Non-VSA actors in the form of operational third parties, such as port terminals, are also taken into consideration, whereas commercial third parties such as commercial infomediaries, are not in scope for this publication.

The user stories described here are examples - they do not constitute a comprehensive list.

ID	As a [persona]	I [want to]	[so that]
1	As a vessel operator	I want to share my long-term vessel schedule information with my vessel partner(s)	so that commercial and operational processes can run without interruptions.
2	As a vessel operator	I want to share the latest ETA and ATA from the regional/coastal vessel schedule information with my vessel partner(s)	so that the vessel partner(s) is informed about expected issues and intended corrective action(s).
3	As a vessel partner	I want to obtain the long-term vessel schedule information from the vessel operator	so that I am informed about arrival of the vessel and can take action accordingly.
4	As a vessel partner	I want to receive the latest ETA and ATA from the regional/coastal vessel schedule information of the ports of call from the vessel operator	so that I can prepare my operational activities at the ports accordingly.
5	As a vessel operator	I want to share changes and associated reasons from the latest issued regional/coastal vessel schedule with vessel partners	so that I can minimise delays.
6	As a vessel partner	I want to receive changes and associated reasons from the previously issued regional/coastal vessel schedule	so that I can adapt my operations accordingly and inform my customers.

Table 2 User stories

Following these user stories, the DCSA Interface Standard for Operational Vessel Schedules 1.0 specifies two different models of interfaces – push and pull – and comprises the following use cases:

- Use case 1 - Subscribe to operational vessel schedule information
 - Use case 1a - Create a subscription
 - Use case 1b - Update a subscription
 - Use case 1c - Cancel a subscription
- Use case 2 - Publish operational vessel schedule information
- Use case 3 - Retrieve operational vessel schedule information

The following sections of this document describe these use cases.

3 Push Interface

3.1 Subscribe to operational vessel schedule information

3.1.1 Create a subscription

3.1.1.1 Use case definition

In the context of operational vessel schedules, this section describes the ‘Create a subscription’ use case via an exemplified interaction between vessel operators, vessel partners and operational third parties.

As part of the VSA, the vessel operator agrees to distribute schedule information to the vessel partners. As such, the vessel operator automatically shares - by default all - operational vessel schedule information with a vessel partner. Hence, it is not necessary for the vessel partner to have a subscription with the vessel operator to receive operational vessel schedule information including updates.

However, creating a subscription allows vessel partners to control the way they receive this information. This ensures that the vessel partners do not receive an overwhelming amount of data with each update but receive only the data they focus on. Furthermore, different departments within one vessel partner might be interested in receiving a different type of operational vessel schedule information and can subscribe accordingly.

Operational third parties interested in operational vessel schedule information need to subscribe to receive a vessel operator’s information. Port operators or port terminals are examples of operational third parties that would not receive operational vessel schedule information if they did not have a subscription or did not participate in the VSA.

The Figure 1 ‘Use case diagram’ below supports the ‘Create a subscription’ use case and displays the interactions between the different actors involved.

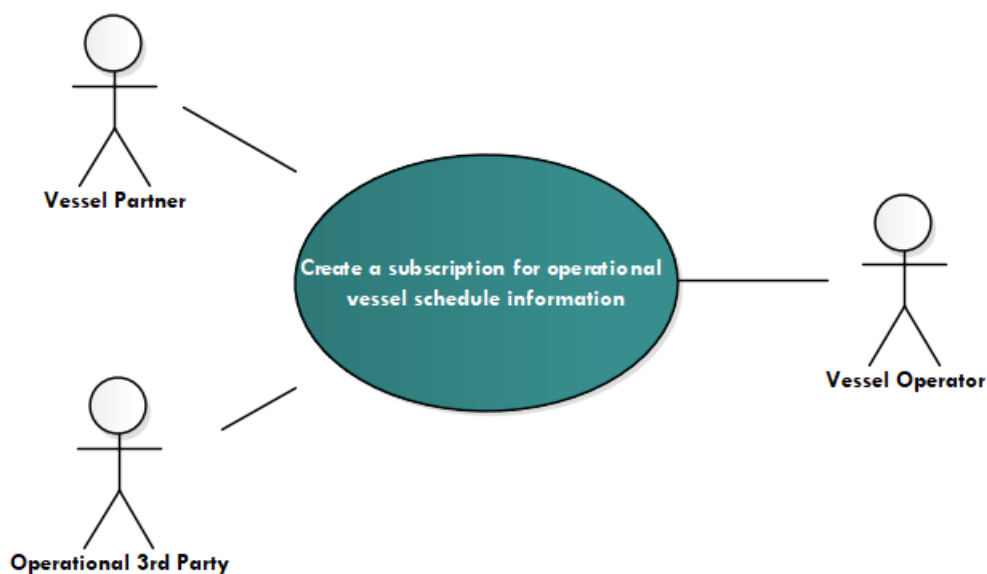


Figure 1 Use case diagram - Create a subscription

Name of use case	Create a subscription		
Created by	DCSA	Last updated by	DCSA P1
Date Created	18 February 2020	Last revision date	03 July 2020
Description	Create a subscription to receive operational vessel schedule information at vessel operator		
Actors	Vessel operator, vessel partner, operational third party		
Preconditions	Not applicable		
Postconditions	A subscription is created by the vessel operator for the vessel partner or third party		
Flow	<ol style="list-style-type: none"> 1. Vessel partner or operational third party subscribes to operational vessel schedule information at the vessel operator 2. Vessel operator validates subscription request 3. Vessel operator creates subscription for the other party 4. Vessel operator sends confirmation of subscription to the other party such as operational third party or vessel partner 		
Alternative flows	Not applicable		
Exceptions	<ol style="list-style-type: none"> 2a. Vessel operator identifies that subscription criteria are invalid or do not exist 2b. The requesting party receives a response with an output error suggesting that the subscription option is invalid 3a. Vessel operator is unable to create subscription due to unforeseen circumstances 3b. Requesting party receives a response with an output error including the reason for the failure 		

Table 3 Use case definition - Create a subscription

3.1.1.2 Activity diagram

The purpose of the activity diagram is to capture dynamic behaviour in the system as a message flow. Figure 2 describes the activity flows that the interface for creating a subscription to operational vessel schedule information provides. The interface activity flow for 'Create a subscription' can follow two paths: The success path or the exception path. The success path for 'Create a subscription' begins when a user sends a request to a vessel operator to subscribe. If the request is valid, the vessel operator creates a subscription for the interested party (vessel partner or operational third party). If the subscription is created, the vessel operator sends a subscription ID to the subscriber. If the subscription is not created, or the request from the subscriber is invalid, the exception path is followed.

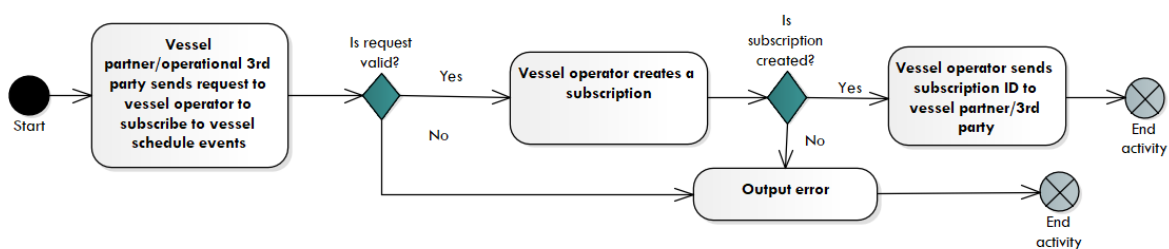


Figure 2 Activity diagram - Create a subscription

3.1.1.3 Inputs

Vessel operators may offer subscription filters that allow subscribers to limit the amount of data they receive in event messages. However, the set of filters is not being standardised at this point in time. The set of data that will be provided in published event messages is described in section 3.2.

Furthermore, certain security considerations must be given in relation to the implementation and usage of the interface. An authentication of clients and, if applicable, users, is required. Carriers are encouraged to implement access management and specific roles in this respect. It remains the responsibility of individual carriers to decide exactly how to implement the security aspect.

Finally, being technology agnostic, this interface standard does not indicate which channel should be used for receiving published events. It is assumed that event messages use the same channel as the subscription message.

3.1.1.4 Outputs

Output Name	Type	Description	Example
Subscription ID	String	REQUIRED. The vessel operator issues a unique ID to the requesting party to identify the subscription.	123e4567-e89b-12d3-a456-426614174000

Table 4 List of outputs - Create a subscription

3.1.2 Update a subscription

3.1.2.1 Use case definition

This section describes the use case of 'Update a subscription' via an exemplified interaction between vessel operators, vessel partners and operational third parties. The Figure 3 Use case diagram - 'Update a subscription' supports this use case, displaying the interactions between the different actors involved.

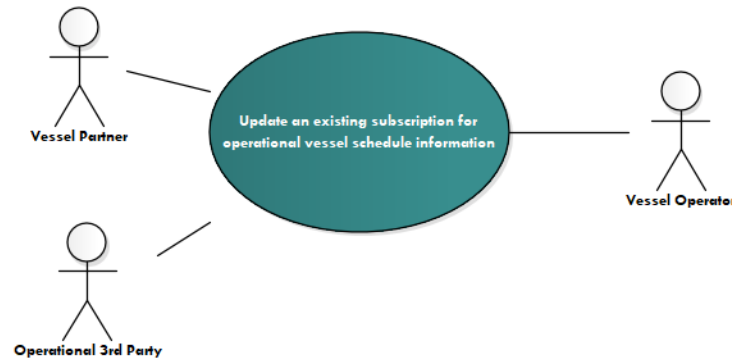


Figure 3 Use case diagram - Update a subscription

If any party already has a subscription in place, the party might choose to update it based on new needs / requirements within the organisation.

Name of use case	Update a subscription		
Created by	DCSA	Last updated by	DCSA P 1
Date Created	14 April 2020	Last revision date	03 July 2020
Description	Update a subscription for operational vessel schedule information		
Actors	Vessel operator, vessel partner, operational third parties		
Preconditions	Subscription is existent		
Postconditions	An updated subscription is created by the vessel operator for a subscriber		
Flow	<ol style="list-style-type: none"> Subscriber (Vessel partner or operational third party) - using its subscription ID - sends update request regarding subscription to vessel operator to filter differently on operational vessel schedule information Vessel operator creates updated subscription for the subscriber (vessel partner or operational third party) Vessel operator sends confirmation of updated subscription to the subscriber (vessel partner or operational third party) 		
Alternative flows	Not applicable		
Exceptions	<ol style="list-style-type: none"> Vessel operator identifies that update subscription criteria are invalid or do not exist Subscriber (Vessel partner or operational third party) receives a response with an output error suggesting that the update subscription option is invalid Vessel operator is unable to update subscription for subscriber (vessel partner or operational third party) due to unforeseen circumstances Subscriber (Vessel partner or operational third party) receives a response with an output error including the reason for the failure 		

Table 5 Use case definition - Update a subscription

3.1.2.2 Activity diagram

The purpose of the activity diagram is to capture dynamic behaviour in the system as a message flow. Figure 4 describes the activity flows that the interface for updating subscriptions provides. This activity flow for 'Update a subscription' can follow two paths: the success path or the exception path. The success path for 'Update a subscription' begins when a user sends a request to a vessel operator to update the subscription. If the request is valid, the vessel operator creates an updated subscription filter scheme for the vessel partner or any operational third party, such as port terminals. If the updated subscription is created, the vessel operator sends a confirmation of the updated subscription to the subscriber (vessel partner or operational third party). If the subscription is not created, or if the request from the subscriber is invalid, the exception path is followed.

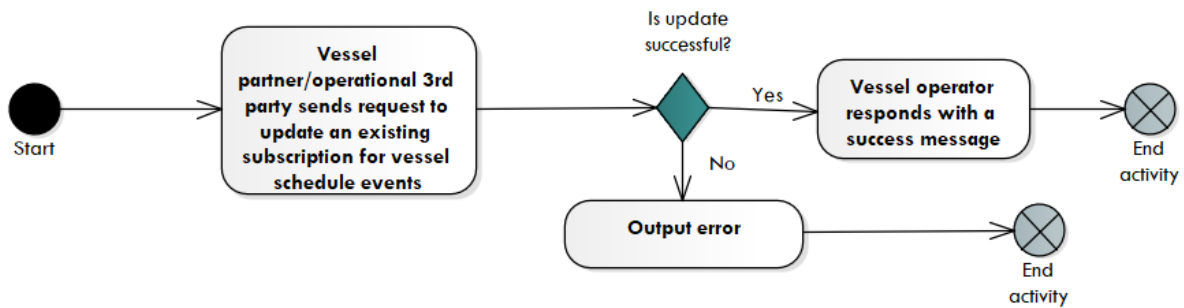


Figure 4 Activity diagram - Update a subscription

3.1.2.3 Inputs

The input is the subscription ID that was generated by the vessel operator for the subscription.

Property Name	Type	Description	Example
SubscriptionID	String	REQUIRED. The ID of the subscription that needs to be updated.	123e4567-e89b-12d3-a456-426614174000

Table 6 List of inputs - Update a subscription

3.1.2.4 Outputs

The output is a message confirming the updated subscription with the new, vessel operator -specific parameters. The output contains a standard success response code.

3.1.3 Cancel a subscription

3.1.3.1 Use case definition

This section describes the use case of 'Cancel a subscription' for operational vessel schedule information via an exemplified interaction between vessel operators, vessel partners and operational third parties. Figure 5 Use case diagram - Cancel a subscription' displays the interactions between the different actors in this use case.

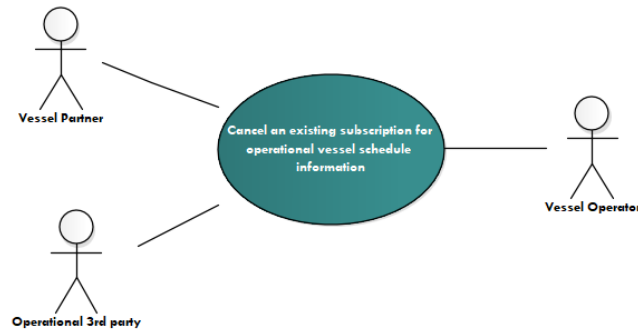


Figure 5 Use case diagram - Cancel a subscription

A vessel operator automatically shares - by default all - operational vessel schedule information with a vessel partner as part of the VSA. Hence, VSA partners that successfully cancel a subscription (which may have filtered the data received in an event message) will once again receive all operational vessel schedule information.

For operational third parties, a successful cancellation of a subscription represents the stoppage of any further transfer of operational vessel schedule information from the vessel operator to the unsubscribed party.

Name of use case	Cancel a subscription		
Created by	DCSA	Last updated by	DCSA P1
Date Created	14 April 2020	Last revision date	03 July 2020
Description	Cancel a subscription for operational vessel schedule information at a vessel operator		
Actors	Vessel operator, vessel partner, operational third party		
Preconditions	Subscription existent		
Postconditions	A subscription is cancelled by the vessel operator for the vessel partner or operational third party		
Flow	<ol style="list-style-type: none"> Subscriber (vessel partner or operational third party) sends cancellation request regarding subscription to vessel operator Vessel operator cancels subscription for the subscriber (vessel partner or operational third party) Vessel operator sends confirmation of cancellation for subscription to the subscriber (vessel partner or operational third party) 		
Alternative flows	Not applicable		
Exceptions	<ol style="list-style-type: none"> Vessel operator is unable to cancel subscription for subscriber (vessel partner or operational third party) due to unforeseen circumstances Subscriber (vessel partner or operational third party) receives a response with an output error including the reason for the failure 		

Table 7 Use case definition - Cancel a subscription

3.1.3.2 Activity diagram

The purpose of the activity diagram is to capture dynamic behaviour in the system as a message flow.

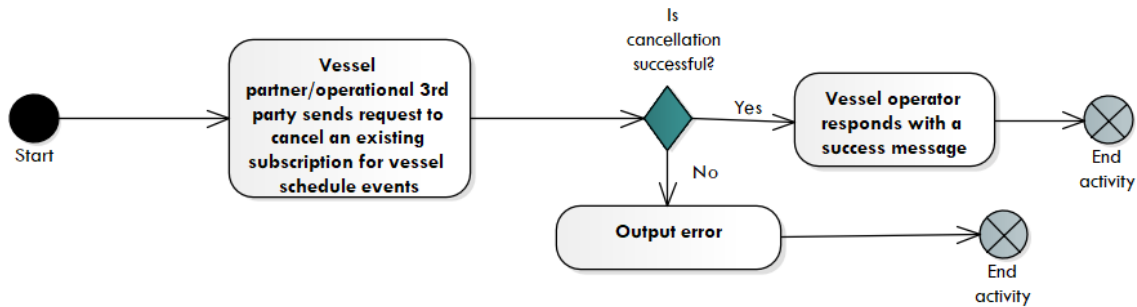


Figure 6 describes the activity flows that the interface for cancelling subscriptions provides. This activity flow for 'Cancel a subscription' can follow two paths: the success path or the exception path. The success path for 'Cancel a subscription' begins when a user sends a request to a vessel operator to cancel the subscription. If the request is valid, the vessel operator cancels the subscription for the subscriber (vessel partner or operational third party). After the subscription has been cancelled, the vessel operator sends a confirmation of the cancelled subscription to the subscriber (vessel partner or operational third party). If the cancellation is not successful or the request from the subscriber is invalid, the exception path is followed.

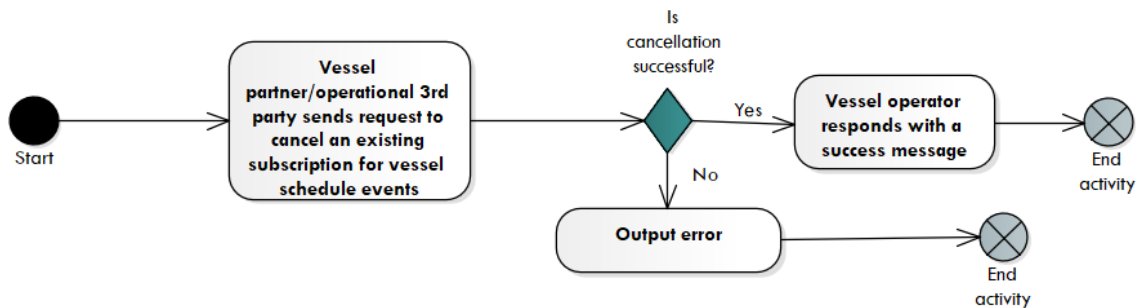


Figure 6 Activity diagram - Cancel a subscription

3.1.3.3 Inputs

The input is the subscription ID that was generated by the vessel operator for the subscription.

Property Name	Type	Description	Example
Subscription ID	String	REQUIRED. The ID of the subscription that needs to be cancelled.	123e4567-e89b-12d3-a456-426614174000

Table 8 List of inputs - Cancel a subscription

3.1.3.4 Outputs

The output is a message confirming the success of the cancellation operation. The output contains a standard success response code.

3.2 Publish operational vessel schedule information

3.2.1 Use case definition

This section describes the use case ‘Publish operational vessel schedule information’ via an exemplified interaction between vessel partners, operational third parties and the vessel operator. Figure 7 Use case diagram - Publish operational vessel schedule information’ supports this use case.

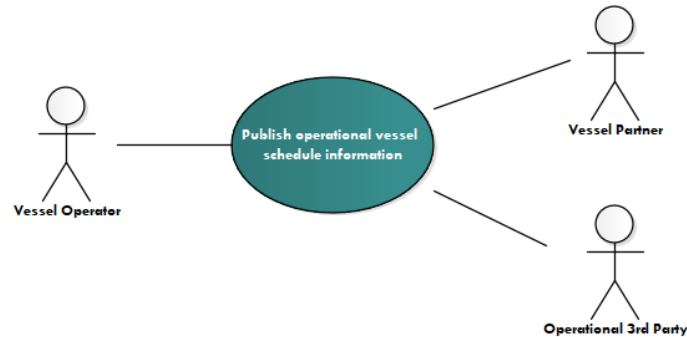


Figure 7 Use case diagram - Publish operational vessel schedule information

Vessel operators publish - by default all - operational vessel schedule information to their vessel partners per the VSA. In some instances, vessel partners might have chosen specific filter criteria to limit the data set received - see previous section 3.1. In these cases, the vessel operator will not publish all operational vessel schedule information, but only those data elements that are in accordance with the filter criteria chosen by the subscriber.

Vessel operators publish operational vessel schedule information to operational third parties, e.g. port terminals, only and exclusively if there is a subscription in place - see previous section 3.1. Conversely, no operational vessel schedule information will be published by the vessel operator to an operational third party if no subscription is in place.

Name of use case	Publish operational vessel schedule information		
Created by	DCSA	Last updated by	DCSA P1
Date Created	18 February 2020	Last revision date	03 July 2020
Description	Publish operational vessel schedule information		
Actors	Vessel operator, vessel partner, operational third party		
Preconditions	Being part of the VSA with a vessel operator OR Having a subscription at the vessel operator in place		
Postconditions	Not applicable		
Flow	1. Vessel operator publishes operational vessel schedule information; if applicable : in accordance with chosen subscription criteria 2. Vessel partner or operational third party confirms receipt of operational vessel schedule information		
Alternative flows	Not applicable		
Exceptions	1a. Vessel operator cannot push vessel schedule information to vessel partner or operational third party		

Table 9 Use case definition - Publish operational vessel schedule information

3.2.2 Activity diagram

The purpose of the activity diagram is to capture dynamic behaviour in the system as a message flow. Figure 8 shows the activity flows provided by the interface for publishing operational vessel schedule information. The main path for 'Publish operational vessel schedule information' begins when a vessel operator receives new events. The vessel operator then publishes the received events to the subscriber (vessel partner or operational third party).

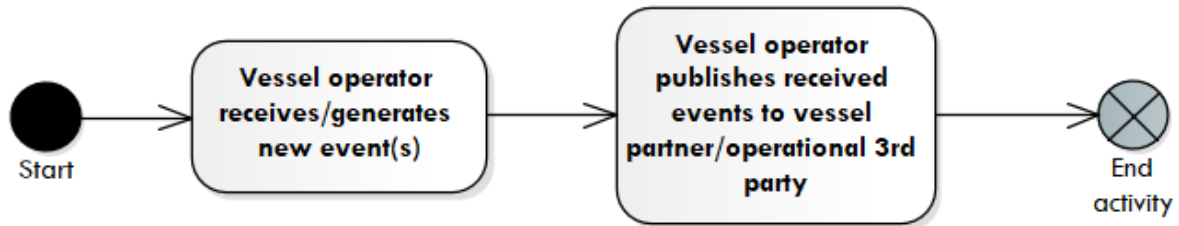


Figure 8 Activity diagram - Publish operational vessel schedule information

3.2.3 Inputs

The previously created subscription is considered as input.

3.2.4 Outputs

Attributes that appear once in each published message:

Output name	Type	Description	Example	Reference data owner
SubscriptionID	String	REQUIRED. The subscription for which this event is published	123e4567-e89b-12d3-a456-426614174000	
Vessel operator carrier code	String	REQUIRED. The identifier of the vessel operator publishing the event.	HDMU	NMFTA /SMDG
Vessel operator carrier code list provider	String	REQUIRED. The parameter identifies the code list provider used for the operator and partner carrier codes. Possible values are: <ul style="list-style-type: none"> • SMDG • NMFTA (SCAC code) 	NMFTA	
Vessel partner carrier code	String	OPTIONAL. The identifier of the vessel partner for which the current message is intended. This field allows specifying multiple, comma-separated values if there is more than one vessel partner involved.	MSCU, HLCU	NMFTA /SMDG
Vessel partner carrier code list provider	String	OPTIONAL. The parameter identifies the code list provider used for the vessel operator and partner carrier codes. Possible values are: <ul style="list-style-type: none"> • SMDG • NMFTA (SCAC code) If 'Vessel partner carrier code' is populated, the code list provider field is to be populated as well.	NMFTA	

Output name	Type	Description	Example	Reference data owner
Start date	Date	OPTIONAL. The start date of the period for which schedule information is sent. The value is populated in ISO 8601 Date format.	2020-04-06	
Date range	String	OPTIONAL. The time period in weeks for which schedule information is sent. The number of weeks is populated in ISO 8601 Duration format.	P4W	DCSA

Table 10 List of outputs - Publish - Common attributes

Attributes that appear multiple times in each message:

Output name	Type	Description	Example	Reference data owner
Carrier service code	String	OPTIONAL. The code of the service for which the schedule details are published.	FE1	
Vessel IMO number	String	OPTIONAL. The identifier of vessel for which schedule details are published. Depending on schedule type, this may not be available yet.	1801323	Lloyd's Register
Vessel name	String	OPTIONAL. The name of the vessel identified by the IMO number.	Vessel A	
Carrier voyage number	String	REQUIRED. The vessel operator assigned voyage number for the respective voyage.	2015W	
UN location code	String	REQUIRED. The UN location code identifies a location in the sense of a city/a town/a village.	SGSIN	UN/CEFACT
UN location name	String	OPTIONAL. The name of the UN Location identified by the UN location code above.	Singapore	
Transport call number	Number	OPTIONAL. The field contains sequence of facility calls within port.	2	
Facility type code	String	REQUIRED. The DCSA four-character code to identify the type of facility.	POTE	DCSA
Facility code	String	REQUIRED. The code used for identifying the specific port terminal being called. A default value of 'other facility' is used if a code has not been assigned to a facility. The SMDG reference codes are used for this attribute.	SGSINTM	SMDG
Other facility	String	OPTIONAL. The alternative way to capture the facility details, when no standardised DCSA facility code can be found.	Singapore Container Terminal, 33 Harbour Road, 119963 Singapore	

Table 11 List of outputs - Publish - Repeated attributes

Attributes that are repeated for each location on the route:

Output name	Type	Description	Example	Reference data owner
Event datetime	DateTime	REQUIRED. The local date and time, where the event is scheduled to take place, in ISO 8601 format. The value includes the UTC time-zone offset. In case of a port omission, the field is populated with the previously shared value by default.	2020-04-06T07:00:00+08:30	ISO
Event classifier code	String	REQUIRED. The code for event classifier, either PLN, ACT or EST. ¹ In case of a port omission, the field is populated as EST.	ACT	DCSA
Event type code	String	REQUIRED. The unique identifier for the type of vessel schedule event (arrival or departure).	ARRI	DCSA
Delay reason code	String	OPTIONAL. The reason code for the delay. The SMDG reference codes are used for this attribute.	WEA	SMDG
Vessel schedule change remark	String	OPTIONAL. The free text information provided by the vessel operator regarding the reasons for the change in schedule and/or plans to mitigate schedule slippage.	Bad weather	

Table 12 List of outputs - Publish - Repeated attributes per location

¹ Communication with terminal operators about 'requested' arrival and departure timeslots is not included in the DCSA Interface Standard for Operational Vessel Schedules 1.0 but is expected to be supported in a future release.

4 Pull Interface: Retrieve operational vessel schedule information

4.1 Use case definition

The DCSA Interface Standard for Operational Vessel Schedules 1.0 describes not only all functionality and actions in the context of a push model as outlined in the previous sections - it also covers the pull model, i.e. when an actor - for instance vessel partner or operational third party - 'pulls'/'fetches'/'retrieves' vessel schedule information from vessel operators. The use case in scope is described below and is supported by a use case diagram displaying the interactions between the different actors involved.

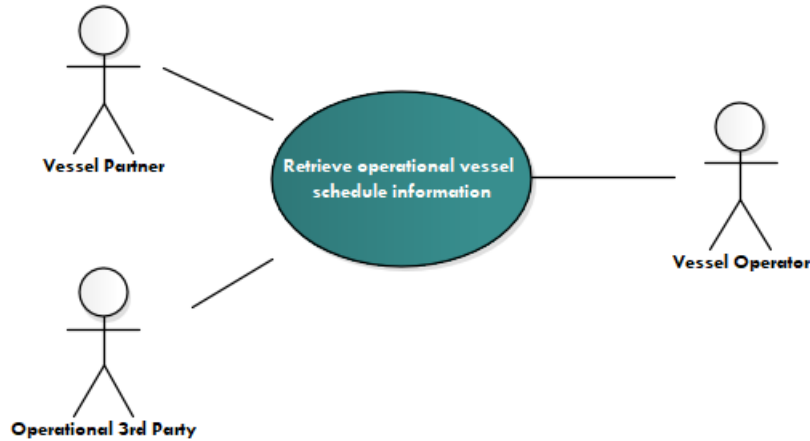


Figure 9 Use case diagram - Retrieve operational vessel schedule information

Name of use case	Retrieve operational vessel schedule		
Created by	DCSA	Last updated by	DCSA P1
Date Created	18 February 2020	Last revision date	03 July 2020
Description	Retrieve operational vessel schedule information from vessel operator		
Actors	Vessel operator, vessel partner, operational third party		
Preconditions	Vessel party or operational third parties have necessary parameters for retrieving operational vessel schedule information		
Postconditions	None		
Flow	<ol style="list-style-type: none"> 1. Vessel partner or operational third party requests vessel schedule details 2. Vessel operator prepares a response containing relevant schedule information 3. Vessel sends response to vessel partner or operational third party 		
Alternative flows	Not applicable		
Exceptions	<ol style="list-style-type: none"> 2a. Vessel operator identifies that the provided parameters are invalid 2b. Vessel partner or operational third party gets a response with an output error indicating that parameters are invalid 		

Table 13 Use case definition - Retrieve operational vessel schedule information

4.2 Activity diagram

The purpose of the activity diagram is to capture dynamic behaviour in the system as a message flow. The activity flow that is provided by the 'Pull' interface for operational vessel schedules is described in Figure 10. The activity begins when a vessel partner or operational third party requests operational vessel schedule details. The request contains input data, which is validated by the vessel operator.

The interface's activity flow can follow two paths: the success path or the exception path. The success path is followed if the input data parameters are valid and recognised by the vessel operator. If that is not the case, the exception path is followed. The success path results in the application returning operational vessel schedule information related to the input data. The exception path results in an error message.

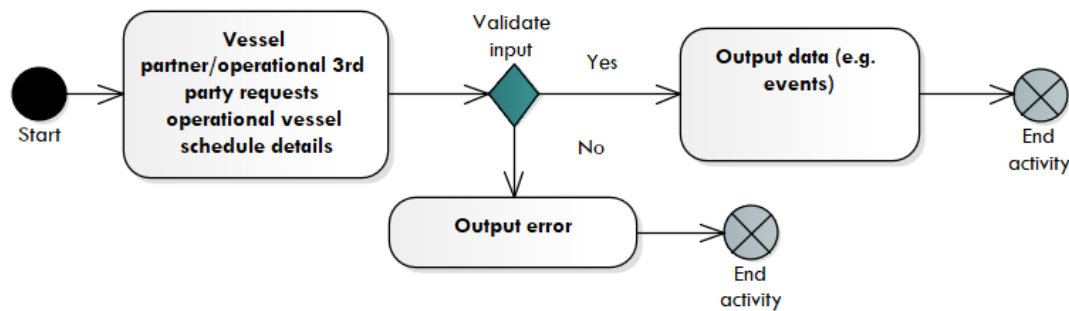


Figure 10 Activity diagram - Retrieve operational vessel schedule information

Error messages should be implemented based on an underlying technology standard. For instance, HTTP error codes should be used if the implementation is in the form of REST APIs. Error codes are defined in [RFC2616](#). Similarly, for EDI-based implementations, error codes should follow an existing standard, i.e. [UN/EDIFACT](#).

4.3 Inputs

The inputs listed below are an integral part of the DCSA Interface Standard for Operational Vessel Schedules 1.0 and as such are necessary implementation elements for vessel operators. The vessel partner or operational third-party consumer is required to provide at least the 'date range' as input for the request.

Input name	Type	Description	Example	Reference data owner
Start date	Date	OPTIONAL. The start date of the period for which schedule information is requested. The value is populated in ISO 8601 Date format. If not provided, the current date is used by default.	2020-04-06	
Date range	String	REQUIRED. The time period in weeks for which schedule information is requested. The vessel operator sends the schedule for the entire period as defined, if less than the range requested. The number of weeks should be populated in ISO 8601 Duration format.	P4W	DCSA
Carrier service code	String	OPTIONAL. The code of the service for which information is sent. This is the code used by the vessel operator for that service and is part of a VSA agreement between the subscribing vessel operator and the vessel operator. If not provided, schedules are sent for all services defined by the VSA agreement.	FE1	

Input name	Type	Description	Example	Reference data owner
Vessel IMO number	String	OPTIONAL. The identifier of the vessel for which schedule information is sent. If not provided, the schedule is sent for all vessels.	1801323	Lloyd's Register
Carrier voyage number	String	OPTIONAL. The vessel operator assigned voyage number for the respective voyage.	2015W	
UN location code	String	OPTIONAL. The UN location code identifies a location in the sense of a city/a town/a village, being the smaller administrative area existing as defined by the competent national authority in each country.	SGSIN	UN/CEFACT

Table 14 List of inputs - Retrieve operational vessel schedule information

4.4 Outputs

Attributes that are present once in each reply message:

Output name	Type	Description	Example	Reference data owner
Vessel operator carrier code	String	REQUIRED. The identifier of the vessel operator publishing the event.	HDMU	NMFTA /SMDG
Vessel operator carrier code list provider	String	REQUIRED. This parameter identifies the code list provider used for the operator and partner carrier codes. Possible values are: <ul style="list-style-type: none"> • SMDG • NMFTA (SCAC code) 	NMFTA	
Vessel partner carrier code	String	OPTIONAL. The identifier of the vessel partner for which the current message is intended. This field allows the specification of multiple, comma-separated values if there is more than one vessel partner involved.	MSCU, HLCU	NMFTA /SMDG
Vessel partner carrier code list provider	String	OPTIONAL. This parameter identifies the code list provider used for the operator and partner carrier codes. Possible values are: <ul style="list-style-type: none"> • SMDG • NMFTA (SCAC code) If 'Vessel partner carrier code' is populated, the code list provider field is populated as well.	NMFTA	
Start date	Date	OPTIONAL. The start date of the period for which schedule information is sent. The value is populated in ISO 8601 Date format.	2020-04-06	
Date range	String	OPTIONAL. The time period in weeks for which schedule information is sent. The number of weeks is populated in ISO 8601 Duration format.	P4W	DCSA

Table 15 List of outputs - Retrieve - Common attributes

Repeated attributes that can be present multiple times in each reply message

Output name	Type	Description	Example	Reference data owner
Carrier service code	String	OPTIONAL. The code of the service for which the schedule details are published.	FE1	
Vessel IMO number	String	OPTIONAL. The identifier of the vessel for which schedule details are published. Depending on schedule type, this may not be available yet.	1801323	Lloyd's Register
Vessel name	String	OPTIONAL. The name of the vessel identified by the IMO number.	Vessel A	
Carrier voyage number	String	REQUIRED. The vessel operator-assigned voyage number for the respective voyage.	2015W	
UN location code	String	REQUIRED. The UN location code identifies a location in terms of a city/a town/a village, being the smallest administrative area existing as defined by the competent national authority in each country.	SGSIN	UN/CEFACT
UN location name	String	OPTIONAL. The name of the UN Location identified by the UN location code above.	Singapore	
Transport call number	Number	OPTIONAL. This field contains the sequence of facility calls within the port.	2	
Facility type code	String	REQUIRED. The DCSA four-character code to identify the type of facility.	POTE	DCSA
Facility code	String	REQUIRED. The code used for identifying the specific port terminal being called. If not available, it is populated as 'Not available'. The SMDG reference codes are used for this attribute.	SGSINTM	SMDG
Other facility	String	OPTIONAL. The alternative way to capture the facility, when no standardised DCSA facility code can be found.	Singapore Container Terminal, 33 Harbour Road, 119963 Singapore	

Table 16 List of outputs - Retrieve - Repeated attributes

Attributes that are repeated for each location on the route:

Output name	Type	Description	Example	Reference data owner
Event datetime	DateTime	REQUIRED. The local date and time where the event is scheduled to take place in ISO 8601 format. This value includes the UTC time-zone offset. In case of a port omission, the field is populated with the previously shared value by default.	2020-04-06T07:00:00+08:30	ISO

Output name	Type	Description	Example	Reference data owner
Event classifier code	String	REQUIRED. The DCSA code for the event classifier, either PLN, ACT or EST. ² In case of a port omission, the field is populated as EST.	ACT	DCSA
Event type code	String	REQUIRED. The DCSA unique identifier for the type of vessel schedule event (arrival or departure).	ARRI	DCSA
Delay reason code	String	OPTIONAL. The reason code for the delay. The SMDG reference codes are used for this attribute.	WEA	SMDG
Vessel schedule change remark	String	OPTIONAL. The free text information provided by the vessel operator regarding the reasons for the change in schedule and/or plans to mitigate schedule slippage.	Bad weather	

Table 17 List of outputs - Retrieve - Repeated attributes per location

5 Closing remarks

The Interface Standard for Operational Vessel Schedules 1.0 defined in this document is meant to serve as a foundation for all interfaces implemented henceforth by the shipping industry in relation to operational vessel schedules. Its creation was a cooperative effort, backed and supported by invaluable input from many of the major shipping vessel operators in the world.

Furthermore, this document brings into focus the content of the DCSA Interface Standard for Operational Vessel Schedules and is enriched with OpenAPI/Swagger definitions published on DCSA SwaggerHub. Users of other technologies are required to adopt the standards in suitable channels, for example, the data delivered through EDI interfaces, manual interfaces, and GUI-based interfaces.

Please refer to the supplementary Reading Guide for deeper insight into next steps and how the DCSA Interface Standard for Operational Vessel Schedules 1.0 can lead to an actual implementation.

² Communication with terminal operators about 'requested' arrival and departure timeslots is not included in the DCSA Interface Standard for Operational Vessel Schedules 1.0 but is expected to be supported in a future release.

6 Appendix

Bureau International des Containers et du Transport Intermodal (BIC) – Container Identification Number (2019):
<https://www.bic-code.org/identification-number/>

International Organisation for Standardisation (ISO) 6346:1995 – Freight containers -- Coding, identification and marking:
<https://www.iso.org/standard/20453.html>

International Maritime Organisation (IMO) – Identification number schemes (2019):
<http://www.imo.org/en/OurWork/MSAS/Pages/IMO-identification-number-scheme.aspx>

International Telecommunication Union (ITU) – Table of International Call Sign Series (Appendix 42 to the RR):
https://www.itu.int/en/ITU-R/terrestrial/fmd/Pages/call_sign_series.aspx

ISO 6346:1995 – Freight containers — Coding, identification and marking — Amendment 3:2012:
<https://www.iso.org/standard/59778.html>

National Motor Freight Traffic Association (NMFTA) - Standard Carrier Alpha Codes (SCAC) 2019:
<http://www.nmfta.org/pages/scac>

Republic of the Marshall Islands - Vessel Registration and Mortgage Recording Procedures (MI-100, 2018):
<https://www.register-iri.com/wp-content/uploads/MI-100.pdf>

Ship-planning Message Development Group (SMDG) – Terminal Code List, Liner Code List, Delay Reason Codes, and SMDG Recommendations:
<http://www.smdg.org/smdg-master-codes-lists/>
<http://www.smdg.org/documents/smdg-recommendations/>

United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) Recommendation no. 19 (2000, first version):
https://www.unece.org/fileadmin/DAM/cefact/recommendations/rec19/rec19_ecetrdr138.pdf

UN/CEFACT – UNLOCODE (2019):
<https://www.unece.org/cefact/locode/service/location.html>

UN/Trade Data Element Directory (TDED) (2005):
<https://www.unece.org/fileadmin/DAM/trade/untddid/UNTDED2005.pdf>

UN/CEFACT Core Component Library (CCL) (2019):
https://www.unece.org/cefact/codesfortrade/unccl/ccl_index.html

UN/Electronic Data Interchange for Administration, Commerce and Transport (EDIFACT):
<https://www.unece.org/cefact/edifact/welcome.html>
and (accessed 2019)

<https://www.unece.org/tradewelcome/un-centre-for-trade-facilitation-and-e-business-unecefact/outputs/standards/unedifact/tradeedifactrules/part-4-edifact-rules-for-electronic-data-interchange-for-administration-commerce-and-transport/part-4-unedifact-rules-chapter-22-syntax-rules.html>

UN/CEFACT BUY/SHIP/PAY Reference Data Model (BSP RDM) (version 1, 2019)
https://www.unece.org/fileadmin/DAM/cefact/brs/BuyShipPay_BRS_v1.0.pdf

UN/CEFACT Multi-Modal Transport Reference Data Model (MMT RDM) (v1.0, 2018)
https://www.unece.org/cefact/brs/brs_index.html

